

Effect of Example Non Example Method Implementation in Scientific Approach and Discovery Learning Model on VII Grade Students' Psychomotor Competence in Learning Natural Science

A Amrianto¹, L Lufri²

¹Student of Master Degree Program of Biologi Education, Faculty of Mathematics and Natural Sciences, State University of Padang

²Lecturer of Biology Department, Faculty of Mathematics and Natural Sciences, State University of Padang

Abstract - Based on the result of questionnaire spread in junior high school 18 Padang, it was found that teachers still have difficulties to make students active in learning process. Beside that, teachers have not implemented cooperative learning, as a requirement of the 2013 Curriculum, in teaching in the classroom. In addition, students rarely ask questions and express their opinion or ideas in learning process. It shows that students' presentation skill (asking questions and expressing opinion or ideas) is still low. Therefore, there is an alternative solution to solve the problems, which is example non example method. This method is one of cooperative learning. Through cooperative learning, students are provided a situation to present their discussion result. Furthermore, it can also support the implementation of discovery learning model and scientific approach in learning process. The discovery learning and scientific approach are recommended in the 2013 Curriculum. The purpose of the research was to know effect of example non example method in scientific approach and discovery learning model on students' psychomotor competence in learning IPA. It was a quasi-experimental research. It was done in grade VII of junior high school 18 Padang. Instrument used was observation sheet. Technique of data analysis used Mann Whitney U test. The Analysis was done by using SPSS software. The finding shows that there is effect of example non example method on students' psychomotor competence in learning IPA. From the hypothesis testing, it is known that sig. Value < 0,05 or 0,030 < 0,05.

Keywords - *Example Non Example, Scientific, Discovery, Psychomotor.*

I. INTRODUCTION

The 2013 Curriculum requires some improvements of mindset or pattern in learning process, such as from teacher-centered learning to student-centered learning, from passive learning to active learning, and from classical learning to cooperative learning [1]. In the academic year 2017/2018, the 2013 Curriculum starts being implemented in school. For example, from 95 SMPs (state or private institution) in Padang, there are 60 SMPs have implemented the 2013 Curriculum and the others still implement KTSP Curriculum[2]. In other word, 63% of junior high school in Padang have implemented the 2013 Curriculum.

Based on the requirements of the 2013 Curriculum and its implementation in school, it was conducted a preliminary research done at August 8th, 2018 in junior high school 18 Padang, as a school which has implemented the 2013 Curriculum. The preliminary research was done to identify problems faced by teachers and students through spreading questionnaires.

Result of the questionnaires showed that teachers have been able to design learning media suitable with the 2013 Curriculum conditions. However, there are still some problems faced by teacher in learning process because it does not implement the changing of learning process pattern from classical learning to cooperative one.

The main problem faced by teachers in learning process is the difficulty to make students active during learning process, especially in asking questions and expressing their ideas or opinion. From the questionnaires, 82% of students rarely ask questions in learning process, while 87% of students are not brave to deliver or express their ideas and opinion. Asking questions and expressing opinion or ideas is a part of presentation activity if it is seen from students' psychomotor competence. From the data above, it can be said that students' psychomotor competence, especially in asking questions and expressing ideas or opinion, is still low. It can also affect the implementation of active learning in the classroom.

One way to solve the problems is using active learning in learning process. Through active learning, students are required to be active. As a result, they will be easier to understand a learning material. It is in line with [3], who say that through active learning, students can understand learning materials more easily. The importance of implementing active learning is also explained by [4], who state that active learning should be developed. It is because the active learning includes in student-centered learning model.

Based on problems faced by students and the 2013 Curriculum requirements, there is an alternative solution to solve the problems, which is implementation of example non example method in scientific approach and discovery learning model. The example non example method in discovery learning and scientific approach has never been implemented yet by teacher who taught at junior high school 18 Padang. Consequently, its effect on students' psychomotor competence is not surely known yet, especially for VII grade students of junior high school 18 Padang.

Consideration of choosing discovery learning model is because it is accustomed to be used by teacher. Beside that, students do not need long time to adapt to this model so that it will not disturb learning times planned by teacher in the classroom. Another consideration is it is a suggested model to use in the 2013 Curriculum. Moreover, it can improve students' learning outcomes [5], and their understanding of learning concepts [6].

The use of scientific approach in learning process is a requirement of the 2013 Curriculum. It is mentioned in Permendikbud No. 103 year 2014. The scientific approach can make students active in learning process [7],[8]. Based on the previous research done by [9], it is explained that the scientific approach is excellent for being combined with

cooperative learning because it can improve students' competences.

The example non example method is a learning method which uses pictures as media to deliver learning materials. By using this method, students are encouraged to think critically and analyze from the provided example (observation result). According to [10], the example non example method includes in cooperative learning. Therefore, it is the main consideration to implement this method in this research.

Another consideration in choosing this method is it is appropriate or suitable to be collaborated with discovery learning model and scientific approach. In discovery learning model, students are required to be independent in learning through discovery. The discovery cannot be separated from scientific activity so that it needs scientific approach. Beside that, the discovery needs media in delivering information, such as pictures so that it needs example non example method. It is in line with [11], who state that the contrast pictures is very important to support discovery learning.

Other consideration of choosing example non example method is its suitability with learning materials taught by teacher, which are KD (basic competencies) 3.6 (Life Organization System and KD 3.7 (Organism Interaction). The learning material of KD 3.6 (Life Organization System) discusses about abstract materials. So, it is appropriate to give examples in form of pictures because basically, learning process occurs 30% from seeing the materials [10]. It is same with KD 3.7 (Organism Interaction), which is more about field observation activity (observing environment). When students cannot observe unaffordable objects, it can be observed by providing pictures as media to facilitate the observation in order to support discovery activities.

Based on the previous research related to example non example method, it is known that there are some strengths of this method. They are 1) it can improve students' learning outcomes [12][13], and 2) it is effective to increase students' activities in learning process [16][17]. By considering problems faced in classroom related to psychomotor competence and requirement of the 2013 Curriculum, the example non example method in discovery learning model and scientific approach is expected to give different and comfortable learning atmosphere. The different learning atmosphere can attract students to pay attention to the learning material and understand it [3]. Therefore, it was

interesting to do a research, entitled: "Effect of Example Non Example Method Implementation in Scientific Approach and Discovery Learning Model on VII Grade Students' Psychomotor Competence in Learning Natural Science".

II. RESEARCH METHOD

It was a quasi-experimental research. It was done in grade VII of junior high school 18 Padang in semester II of academic year 2018/2019. Population of research was all VII grade students in junior high school 18 Padang, who are registered in academic year 2018/2019. They are 228 students from 9 classes. Sample was taken by using purposive sampling technique. The purposive sampling technique means that the sample is purposefully selected based on certain characteristics based on the needs [16].

Criteria of classroom taken as samples are the classes are taught by same teacher and they have similar variance score (in order that the treatment effect can be seen clearly). The first criterion was the classes are taught by same teacher. So, this research was done to two classes taught by Mrs. Deswita, S. Pd., which are VII.6 and VII.8. Next, the second criterion was the classes have similar variance score. To know it, homogeneity test was done to two classes. It was done by using daily test (UH) scores as data. Result of the homogeneity test shows that sig. value of both classes is 0.120, which means that both classes have similar variance (if sig. Value > 0.05, the two sample classes have similar variance). In addition, this research used Randomized Control-Group Posttest Only Design.

Research instrument used was practice and project observation sheets. It is completed with scoring rubrics to facilitate observers in scoring students' affective competence. It was also validated by one expert and one Natural Science (IPA) teacher.

The data processing uses SPSS software. Technique of data analysis was done through hypothesis testing. Statistical test used was Mann-Whitney U-Test because the data are ordinal. The criteria of hypothesis testing by using Mann-Whitney U-Test are as follow.

- 1) H_0 is accepted if sig. value > 0.05.
- 2) H_0 is rejected if sig. Value < 0.05.

Description:

H_0 : there is no effect of example non example method implementation in scientific approach and discovery learning model on grade VII students' Natural Science

(IPA) psychomotor competence in junior high school 18 Padang.

H_1 : there is an effect of example non example method implementation in scientific approach and discovery learning model on grade VII students' Natural Science (IPA) psychomotor competence in junior high school 18 Padang.

III. FINDING AND DISCUSSION

1. Finding

Data of students' psychomotor competence are obtained from observation done by a teacher and peer as observers. The data of students' psychomotor competence can be seen in Table 1 below.

Table 1. Average Score, Maximum Score, and Minimum score of experimental and control classes in Psychomotor Competence

Class	N	Average	$X_{\max}$	$X_{\min}$
Experimental	32	86.48	90	80
Control	32	82.96	90	72.50

Based on Table 1 above, it is known that the average score of psychomotor competence in experimental class (86.48) is higher than in control class (82.96). Meanwhile, the highest score in both experimental and control classes are 90. Minimum score in experimental class is 80, while minimum score in control class is 72.50.

Next, hypothesis testing was done by using Mann-Whitney U-Test in assistance of SPSS software. The result of hypothesis testing can be seen in Table 2 below.

Table 2. Result of Hypothesis Testing

Class	Sig.	A	Desc.
Experimental	0.030	0.05	H_0 is rejected
Control			

Based on Table 2 above, it is known that the significant value of the hypothesis testing is 0.030. It means that sig. value < 0.05, so H_0 is rejected. Therefore, it can be concluded that there is an effect of example non example method in scientific approach and discovery learning model on grade VII students' Natural Science (IPA) psychomotor competence in SMPN 18 Padang.

2. Discussion

Based on the research finding, students' average score of psychomotor competence in experimental class (86.48) is higher than in control class (82.96). From the hypothesis

testing, it is known that sig.value of psychomotor competence is 0.03, which shows that H_0 is rejected, so H_1 is accepted. It means that there is an effect of example non example method in scientific approach and discovery learning model on students' psychomotor competence in learning IPA.

In the psychomotor competence, treatment was given by adding picture analysis item into students' practice worksheet. In the psychomotor competence, treatment was given by adding picture analysis item (observation result analysis) into students' practice worksheet (LKPD). It was done to match it with example non example method because this method emphasizes learning by analyzing pictures. So, students' LKPD is completed with questions related to observation result. Students are led independently to express their ideas or opinion in form of pictures or tables. The pictures can improve students' understanding by making the learned materials real into pictures made by themselves [17].

The LKPD completed with picture analysis items gives positive effects for students. For instance, it can encourage and motivate them to question what they make. In other word, it can create active learning in the classroom. The active learning here is related to ability to ask questions and expressing opinions or ideas. Students are active in asking questions because there is a requirement to fulfill observation result analysis items. Moreover, expressing opinion or ideas is also required in observation result analysis items because students are free to answer the items. It makes them more freely in expressing their ideas or opinion. It is also stated by [14] that using example non example method can increase students' activities in learning process.

Beside that, it also provides students with initial provision (observation analysis result in form of pictures) and confidence to perform in classroom presentation. It is seen when teacher gave opportunity for group to present their presentation, students wanted to be the first to do it because they have had the initial provision to be presented in front of the classroom.

Furthermore, the example non example method, as one of cooperative learning, can contribute in learning process through students' activities in group in which they can express their opinion more to explain the observation result analysis items. Beside that, they are not burdened in giving presentation because they do it in group. If their observation result is wrong, not only a students feels guilty. It is

different from doing presentation alone, in which they are afraid to be laughed by their friends in the classroom when their observation result is wrong.

Practices done to actualize the learning materials, especially KD 3.6 (Life Organization System) learning material, which tends to be abstract, such as cells, tissues, etc. students are enthusiastic in doing practice for KD 3.6 (Life Organization System) and KD 3.7 (Organism Interaction with environment). However, the contrast between experimental and control classes is students in experimental class is more active than in control class. It might be affected by their initial provision before doing practice (during theory learning in the classroom). Higher understanding of a learning material will motivate students to explore knowledge deeper, both knowledge that has been learned and knowledge that has not been learned.

IV. CONCLUSION, IMPLICATION AND SUGGESTION

1. Conclusion

Based on the finding of the research, it is concluded that there is an effect of example non example method implementation in scientific approach and discovery learning model on VII grade students' psychomotor competence in learning Natural Science in junior high school 18 Padang.

2. Implication

Based on the discussion, it is known that students' psychomotor competence has improved by using the treatment. Beside that, the treatment can also support active learning. The active learning happens because there is observation result analysis items in students' LKPD and group activities done by students. The group activity can make them explore learning materials further because they share various and different ideas.

3. Suggestion

Based on the conclusion and implication above, there is a suggestion for teacher to use example non example method in discovery learning model and scientific approach as an effort to improve students' psychomotor competence in learning IPA.

REFERENCES

- [1] Kemendikbud. 2013. *Permendikbud Republik Indonesia Nomor 68 Tahun 2013*. Jakarta: Kemendikbud.

- [2] Kemendikbud. 2018. *Data Sekolah Kemendikbud Tahun Pelajaran 2017/2018*, (Online), (<http://sekolah.data.kemdikbud.go.id/index.php/home/pencarian/>), retrieved on February 27th, 2018).
- [3] Lufri, Fitri, R., and Yogica, R. 2018. "Development of Learning Models Based on Problem Solving and Meaningful Learning Standards by Expert Validity for Animal Development Course". In *IOP Conference Series: Materials Science and Engineering*, 335(1), p. 012094. IOP Publishing.
- [4] Lufri, Sudirman, S., and Rahmi, S. 2016. "Mengembangkan Skill Mengajar (*Teaching Skill*) Mahasiswa Calon Guru Menggunakan *Multy Strategies*". *Ta'dib*, 15(1).
- [5] Arifani, Y. 2016. "The Implementation of Team-Based Discovery Learning to Improve Students' Ability in Writing Research Proposal". *Canadian Center of Science and Education*, 9(2): 111-119.
- [6] Rahmat. 2017. "Kemampuan Pemecahan Masalah Matematika melalui Model Discovery Learning dalam Menemukan Pola Barisan dan Deret Aritmatika". *Pascasarjana Universitas Syiah Kuala*, 4(2): 129-134.
- [7] Firman, Baedhowi, and Wiedy, M. 2018. "The Effectiveness of The Scientific Approach to Improve Student Learning Outcomes". *International Journal of Active Learning*, 3(2): 86-91.
- [8] Mardiyani, D. 2016. "Penerapan Pendekatan Saintifik untuk Meningkatkan Kemampuan Pemahaman dan Pemecahan Masalah serta Disposisi Matematis Siswa SMAN 5 Sukabumi". *Tesis*. Jawa Barat: Universitas Pasundan.
- [9] Said, I. M., Eddy, S, and Machmud, S. 2016. "The Scientific Approach-Based Cooperative Learning Tool for Vocational Students Vocation Program of Autotronic (Automotive Electronic) Engineering". *IOSR Journal of Research & Method in Education*, 6(3): 67-73.
- [10] Hosnan. 2014. *Pendekatan dan Kontekstual dalam Pembelajaran Abad 21*. Jakarta: Ghalia Indonesia.
- [11] Briggs, C. L. 2001. "Discovery Learning, Cognitive Psychology of". *Elsevier: International Encyclopedia of the Social Science*, 3736-3739.
- [12] Saputra, S. 2017. "Ketuntasan Belaajr Siswa pada Materi Protista dengan Menggunakan Metode Example Non Example Pada Konsep Protista". *Jurnal Variasi*, 9(2): 21-14.
- [13] Rahmawati, N. 2014. "Efektivitas Metode Example Non Example dalam Pembelajaran Menulis Puisi Bebas Peserta didik Kelas VIII MTs Negeri Harjokuncaran Kabupaten Malang Tahun Pelajaran 2013/2014". *NOSI*, 2(3): 142-154
- [14] Faradiba, A. H., Maryadi, Mauly, H. H. 2017. "The Contribution of ExampleNon Example Strategy, Students' Motivation and Students Learbibg Style Toward Students' Writing Achievement of Descriptive Text". *Thesis*. Surakarta: Universitas Muhammadiyah Surakarta.
- [15] Purnomo, H. 2014. "Upaya Meningkatkan Pemahaman Siswa dengan Menggunakan Metode Eample Non Examples pada Mata Pelajaran PKn Materi Hak Asasi Manusia (HAM) Siswa Kelas X SMA Negeri 1 Slahung Ponorogo Tahun Pelajaran 2013/2014". *Disertasi*. Ponorogo: Universitas Muhammadiyah Ponorogo.
- [16] Setyaningsih, Y., Margereta, R., Bambang, P. 2013. "Penerapan Metode Example Non Example dalam Pembelajaran Keanekaragaman Hewan di SMPN 2 Tenganan Kabupaten Semarang". *Journal of Biology Education*, 2(2): 156-164.
- [17] Suryani, K., Rusdi, Syafri, M. 2016. "Penerapan Metode Examples Non Examples untuk Meningkatkan Aktivitas dan Hasil Belajar Matematika Siswa Kelas VII SMP Al-Karim Kota Bengkulu". *Thesis*. Bengkulu: Universitas Bengkulu.
- [18] Lufri and Ardi. 2014. *Metodologi Penelitian*. Padang: UNP Press.
- [19] Takacs, Z. K., Adriana, G. B. 2017. "How Pictures in Picture Storybooks Support Young Children's Story Comprehension: An Eye-Tracking Experiment". *Elsevier: Journal of Experimental Child Psychology*, 174: 1-12.